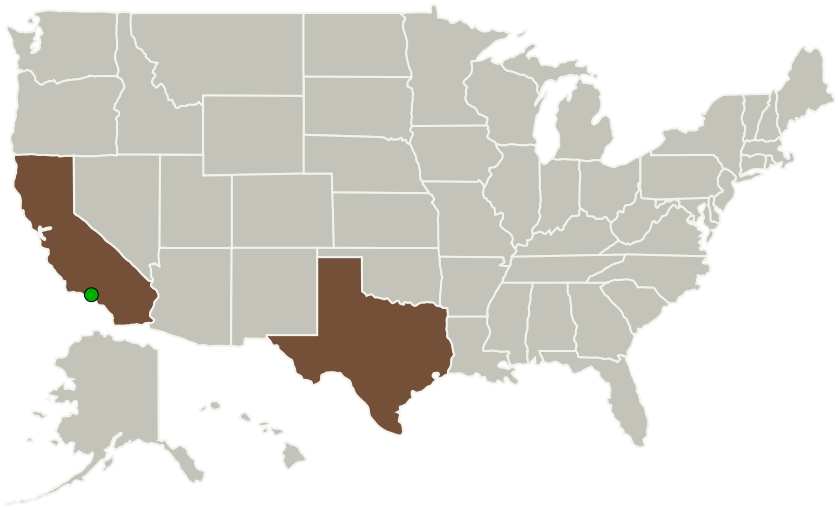
High Quantum Efficiency Type II SLS FPAs for Space-Based Applications, Phase II

Completed Technology Project (2012 - 2015)

Project Introduction

This Phase II SBIR proposes to develop high quantum efficiency (QE) and low dark current infrared epitaxy materials based on Type II Strained Layer Superlattice (SLS) for space-based sensor applications. The epi materials will be grown with Sb-capable multi-wafer production Molecular Beam Epitaxy (MBE) reactor at IntelliEPI. The initial goal includes achieving QE of at least 50% with MWIR spectral wavelength band in the 2.5 to 12 um, and possibly beyond. The SLS detector design will be done in collaboration with Dr. Sarath Gunapla's infrared device group at JPL to ensure that the effort addresses NASA needs. Advanced structure design incorporating barriers will be used to reduce dark current. If successful, a Focal Plane Array may be fabricated during Phase II.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
IntelliEPI IR, Inc.	Lead Organization	Industry	Richardson, Texas
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

High Quantum Efficiency Type II SLS FPAs for Space-Based Applications Project Image

Table of Contents

High Quantum Efficiency Type II SLS FPAs for Space-Based Applications, Phase II

Completed Technology Project (2012 - 2015)

Primary U.S. Work Locations	
California	Texas

Project Transitions

April 2012: Project Start

February 2015: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137391)*

Images

Project Image
High Quantum Efficiency Type II SLS FPAs for Space-Based Applications Project Image *(https://techport.nasa.gov/image/132756)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

IntelliEPI IR, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

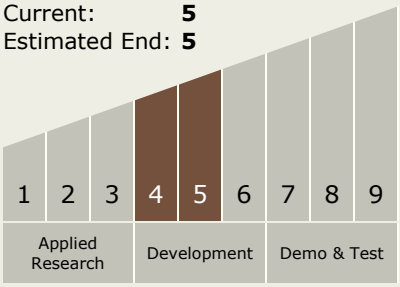
Carlos Torrez

Principal Investigator:

Paul R Pinsukanjana

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System